

An accelerated over-relaxation quarter-sweep point iterative method for two-dimensional poisson equation.

ABSTRACT

Iterative methods, particularly over-relaxation methods, are efficiently and frequently used to solve large systems of linear equations, because in the solutions of partial differential equations, these methods are applied to systems which are resulted from different iterative schemes to discrete equations. In this paper we formulate an accelerated over-relaxation (AOR) method with the quarter-sweep iterative scheme applied to the Poisson equation. To benchmark the new method we conducted experiments by comparing it with the previous AOR methods based on full- and half-sweep iterative schemes. The results of the experiments and the estimation of the computational complexity of the methods proved the superiority of the new method.

Keyword: Accelerated over-relaxation; Point iterative methods; Poisson equation